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EXPERIMENTS WITH NARCOTINE.

*Experiments for the purpose of determining the Operation of Narcotine upon the Human System, in a State of Health.* By WILLIAM TULLY, M.D. Professor of Materia Medica and Therapeutics in the Medical Institution of Yale College.

Communicated for the Boston Medical and Surgical Journal.

THE first four of the subsequent experiments (according to the order in which they are arranged) were instituted for the sole purpose of determining the operative effects, upon a person in health, of a single full dose of NARCOTINE; and it was, therefore, taken pure and in substance.

EXP. I.—A. L. B. M., of ordinary susceptibility to the impression of medicinal agents, and with his pulse at seventy beats in a minute (their natural standard), took, at half past two o'clock, P. M., on Monday, March 7, 1831, two grains of Pelletier's Narcotine, merely moistened with a little water.

At three o'clock the pulse was reduced to sixty beats in a minute, without any perceptible variation, either in force or fulness, and without any unusual sensations of any sort.

At four o'clock, the same condition continuing, four additional grains of Narcotine were taken in the same manner as the former two.

At five o'clock the pulse was reduced in frequency to fifty-two, and was obviously softer, and more readily yielding to pressure; but there was no change in any of the sensations from their natural state.

At half past five o'clock the pulse remained of the same frequency, and, as far as could be perceived, of the same force and fulness; but there was now a mazy and confused feel of the head, though without vertigo or headache.

Between half past five and six o'clock, tea was drank, and a light supper was taken.

At six o'clock the pulse was fifty-six, and very soft and compressible—there was considerable languor and lassitude—considerable perspiration and considerable vertigo, which last symptom was much increased, on exertion or motion of any sort.

At seven o'clock the pulse was still at fifty-six—the vertigo was much the same as at six o'clock—but there was less perspiration. There was now very considerable somnolency, a disagreeable sensation in the epigastrium, some itching of the surface, and a very prominent hoarseness.

At half past seven the pulse remained unchanged, but all the other symptoms were increased. There was, in addition, a slight thickness of speech; when walking a slight vacillating gait; and, on attempting to evacuate the bladder, it was slow in contracting, and the process required an unusually long time. When quiet, the general sensations were described as being rather agreeable.

All the foregoing symptoms, but more especially the somnolency, the thickness of speech, the hoarseness, and the staggering in the gait when walking, were gradually increased during the next two hours. There were also slight symptoms of nausea on motion, and there was dozing in a chair.

At half past nine, P. M., walked about a quarter of a mile, and could walk better the latter part of this distance than the first. At the end of this walk, the symptoms were somewhat diminished. After this, sat up till about eleven o'clock, P. M., during which period the effects produced by the Narcotine were again increased—there was some difficulty of talking intelligibly, not only from confusion of mind, but from inability to manage the organs of speech. The hoarseness continued, and there was again great difficulty in voiding urine.

At a little after eleven o'clock, went to bed, fell asleep immediately, and slept soundly all night—much as when under the influence of Opium. In the morning the mouth was dry and clammy in a slight degree, and there was still considerable torpor of the bladder; but in all other respects, a natural state.

Exp. II.—W. T., of ordinary susceptibility to the impression of medicinal agents, and with his pulse at seventy-two beats in a minute (their natural standard), took, at half past two o'clock, P. M., on Monday, March 7, 1831, two grains of Pelletier's Narcotine, merely moistened with a little water.

At three o'clock, P. M., the pulse was reduced to sixty-eight, but without any perceptible change, either in force or fulness, or any change in any sensation.

At four o'clock, there being no further change, either in pulse or sensations, took four additional grains of Narcotine, in the manner last mentioned.

At five o'clock the pulse was at sixty-four, but without any appreciable variation, either in force or fulness. At this time, the general sensations exactly resembled the first or mere antirritant degree of the narcotic operation of an ordinary full dose of the Sulphate of Morphine, which I have often used.

At half past five o'clock, pulse still at sixty-four, but otherwise unchanged—the sensations above described as exactly resembling the first or mere antirritant degree of the narcotic operation of an ordinary full dose of the Sulphate of Morphine, very considerably increased—also about as much dryness and clamminess of the mouth and fauces, and about as much hoarseness as commonly results from the last-mentioned agent.

Between half past five and six o'clock, P. M., drank two cups of tea, and ate a moderate supper, during which there was rather an increase of all the sensations and symptoms above described.

At six o'clock, P. M., immediately after tea, pulse still at sixty-four, but considerably softer and more compressible than heretofore, and likewise somewhat smaller. At this time there was considerable vertigo, and a mazy feel of the head—considerable languor and lassitude, and slight nausea—all materially increased by motion and exertion. At this time, too, it was observed that a slight chronic dyspnoea, and an accompanying irritative cough, to which I have been habitually subject for many years, was perfectly relieved, just as it always has been by a single full dose of Sulphate of Morphine. My speech was now noticed to be somewhat thick, my hoarseness increased, and on attempting to walk my gait was perceived to be unsteady and slightly staggering.

At half past six o'clock the pulse was sixty, but in other respects as when last examined—the vertigo and nausea were increased, much more especially on motion, and there was a free perspiration. On attempting now to empty the bladder (which had not been done for a long time), there was at first a total inability, from deficiency of contractile power. At last, after considerable effort, the urine began to flow, and continued to do so very slowly till it had all passed off, the process occupying more than twice the usual time.

At seven o'clock the pulse was still at sixty, and moderately reduced in force and fulness—there was positive, and, in fact, free sweating—the clamminess of the mouth, the hoarseness, and the thickness of speech, about as last mentioned—the nausea, confusion of the head, and vertigo, still increased—and there was considerable somnolency.

At quarter past seven, after a little increase of nausea, there was sudden vomiting—retched about three times—threw up a part of my supper, about as much digested as it ought to be for this length of time after eating—the process of vomiting being far easier than is common with me.

At half past seven there was another paroxysm of vomiting, very exactly similar to the last, by which another portion of my supper was thrown up—after which the somnolency was considerably increased, so that I fell asleep in my chair, a very unusual thing with me upon any occasion.

At eight o'clock there was another exactly similar paroxysm of vomiting, the process being again uncommonly easy for me. The disposition to sleep was now nearly irresistible, and while dozing in my chair I had frequent slight startings. At this time there was such a degree of sweating, as to render all the clothes next my skin quite wet.

At half past nine, P. M., on attempting to go to bed, there was another paroxysm of vomiting similar to those above described, which completely emptied my stomach, but brought up no bile, and nothing having an ill taste. After this, went immediately to bed, and fell asleep almost instantly, not awaking till two o'clock, A. M., of the 8th, when I felt exactly as after sleep produced by a single full dose of Sulphate of Morphine. After lying awake about an hour, I again fell into a light dreamy sleep, which continued till after break of day. On getting up, I felt but little appetite for breakfast, and had cool feet and hands all day. I also remained all day entirely free from any dyspnoea, or any cough, but was otherwise in a perfectly natural state, with the exceptions to be hereafter specified in my second experiment upon myself.

**Exp. III.**—Monday, March 7, 1831, W. T. P., of more than ordinary susceptibility to the impression of medicinal agents, and with his pulse at eighty in a minute (their ordinary frequency), took, at half past two o'clock, P. M., two grains of Pelletier's Narcotine, merely diffused in a little water.

At three o'clock the pulse was irregular, and varied from seventy-two to eighty in a minute, according as the subject of the experiment was at rest or in motion, but it was apparently unchanged in force and fulness. No sort of change in any of the sensations was perceived.

At four o'clock the pulse was stationary at seventy-two—no change in symptoms or sensations. Now took four additional grains of Narcotine, in the same manner as before.

At five o'clock, P. M., pulse still seventy-two—somewhat softer and smaller—in other respects no change in symptoms or sensations.

At half past five, P. M., there began to be a slight mazy and confused feel of the head; and, on motion or exertion, slight vertigo and a little headache.

Between this and six o'clock, drank tea, and took a light supper.

At six o'clock, pulse sixty-four, very soft—slight nausea and much confusion of the head—the confusion of the head and the nausea increased on motion or exertion—when quiet, a strong sensation of languor and lassitude—considerable perspiration, and considerable hoarseness.

At half past six, the vertigo and nausea, on motion or exertion, were so much increased as to render it necessary to lie down in order to avoid vomiting.

At seven o'clock, still obliged to keep on a bed—pulse fifty-six in a minute—slight darting pains in the stomach, continuing but a few seconds at once—perspiration as when last mentioned—very considerable itching of the surface—but notwithstanding, when quiet, sensations quite pleasurable.

At half past seven o'clock, still on the bed. There was now considerable somnolency—when dozing, there was a perception of all sorts of grotesque figures dancing before the sight—when the sleep was a little more deep, there was a sensation of falling into an immense pit, in company with the same sort of figures. When the sensation of falling existed, there was starting.

At eight o'clock, still on the bed, and still very sleepy—still the same perception of numerous grotesque figures, which, however, were not at all disagreeable or troublesome, if unaccompanied with the sensation of falling. Remained very sleepy and dozing upon the bed, but in all other respects the same, till half past nine o'clock, P. M., at which time got up. This immediately occasioned vertigo. Could not stand still, nor walk without staggering. Speech thick and indistinct—quite hoarse. Now began a walk of about a quarter of a mile—vomited a little, and in a remarkably easy manner—felt a disposition to vomit during the whole walk, but could restrain it—felt also chilly, and had chattering of the teeth on first setting out, which continued two thirds of the way, after which it gradually disappeared—knees seemed very weak the whole distance—walked quite fast, and at last became warm—a general diminution of all the symptoms produced by the walk—as soon, however, as it was

ended, the languor and lassitude, the vertigo and the nausea, again returned. On stopping, felt much fatigued, exactly as after violent running—breathing was short and hurried—was very hoarse, and could hardly speak—appeared sick to the bystanders.

About ten o'clock, P. M., very suddenly vomited thoroughly, emptying the stomach completely—the paroxysm unusually easy, and ending as soon as it began. After vomiting, all the symptoms were temporarily relieved. At this time, attempted to empty the bladder—found its contractile power much impaired, the process being difficult and slow, but not at all painful.

About a quarter past ten went to bed, and slept quietly all night, awaking but once before morning. In the morning there was a sensation of dryness and clamminess of the mouth—felt perfectly well when quiet—got up about half past six o'clock, A. M. (Tuesday, March 8th), but, on motion, still experienced vertigo—there was still a hoarseness—and on attempting to empty the bladder, found about as much torpor and slowness of contraction as the evening previous—attempted to read, but could not on account of confusion of head—walked about a little, but soon experienced nausea—vomited more than the night before, and the paroxysm was considerably more severe, but brought up no bile, and nothing having a bad taste.

At half past seven, A. M., obliged to lie down on a bed, after which soon felt well, and continued to feel so as long as upon the bed.

At eight o'clock (the breakfast hour) got up—felt some vertigo—had little or no appetite, but ate half a dozen very small oysters, and drank half of a small cup of coffee—again experienced some nausea, and was obliged to leave the table and lie upon the bed, upon which felt well immediately. The pulse was now fifty-six in a minute—slept about two hours—then got up, and between half past ten and eleven o'clock, A. M., walked a quarter of a mile, the symptoms, all the while, gradually subsiding. However, there was still some dryness of the mouth—some hoarseness—some nausea—some languor and lassitude—some vertigo, and some headache, though the last was trifling.

As late as twelve o'clock, M. (Tuesday, 8th), the pulse remained as unfrequent as fifty-six beats in a minute.

At one, P. M., dined with a good appetite—but some vertigo and some somnolence remained through the whole day.

After supper, felt so unusually sleepy, as to be unable to refrain from dozing. Went to bed at half past seven o'clock, and slept quietly till ten, P. M.; then awoke and remained awake for ten or fifteen minutes, after which fell asleep again, and did not awake any more till six o'clock, A. M., on Wednesday, 9th; at which time got up with headache, but had a good appetite for breakfast, after which the headache entirely disappeared.

At the commencement of this experiment, the subject of it labored under considerable chronic cough, which was entirely removed by it. During each day of the experiment, had the customary and regular discharges from the intestines. Also during the whole progress of the experiment, it was particularly observed that there was no increased heat of the system, and no increased force or fulness of the pulse. On the

contrary, the pulse became softer, and likewise smaller, but not so much so as to render it of any material importance to specify this part of the operation of Narcotine, among its valuable remedial effects.

In this experiment the dose was undoubtedly larger, in proportion to the susceptibility of the subject, than the dose used by any other gentleman; and there was accordingly greater vertigo, and this was accompanied with much more nausea, which endured for a much longer time. During the existence of positive nausea, or of actual vomiting, the sensations were, of course, unpleasant; but when there was perfect quiet on the bed there was no nausea, and all the sensations were pleasurable.

EXP. IV.—A. R. T., ordinarily extremely insusceptible to the impression of all classes of medicinal agents, except cathartics—his pulse being at sixty-eight in a minute—took (Wednesday, March 9, 1831), at eleven o'clock, A. M., eight grains of Pelletier's Narcotine, simply diffused in a little water, and immediately went about business which required active exertion both of body and mind.

In about fifteen minutes he felt a slight universal sensation of warmth, and a slight sensation of uneasiness in the epigastrium, both too inconsiderable to have attracted attention under other circumstances.

About half past eleven began to feel highly pleasurable sensations, difficult to describe, but differing from the exhilaration of Opium.

About twelve o'clock, M., there began to be considerable itching of the whole surface, more intense, however, in the nose, and on the inside of the thighs, which gradually increased till about half past two o'clock, when it had reached a high degree, after which it gradually subsided.

About half past twelve began to be sleepy, which symptom gradually and regularly increased till five o'clock, P. M.

At one o'clock (the customary hour of dinner) felt little appetite, and therefore ate but little.

At half past one, P. M., so sleepy as hardly to be able to keep awake in a chair, though in a very social company.

At two o'clock pulse fifty-five when sitting, but sixty-five when standing, and very soft and compressible. Now felt very slight nausea on motion or exertion—pupils of the eyes much contracted, and on looking at minute objects they appeared blurred—expression of the countenance strikingly dull and heavy, and something about it, beside this, which is indescribable—the mouth felt dry and clammy, but looked moist to the eye—there was no thirst.

At half past two o'clock the pulse was fifty-four while sitting—the speech now began to be thick and indistinct, and almost stammering. At this time walked about a quarter of a mile, toward the end of which the gait was observed to be staggering.

At three o'clock pulse forty-eight when sitting—a sensation of considerable languor and lassitude—so sleepy as not to be able to keep awake when still, and more especially when sitting.

From three to five o'clock, P. M., remained asleep in a chair—sleep perfectly calm, easy, and quiet—respiration perfectly natural, and exactly like that of a person awake but sitting still—very easily roused from this sleep, and as easily relapsing into it. When roused, the pupils of the eyes were observed to be still contracted—still there was considerable

itching—still a sensation of dryness and clamminess in the mouth—still thick and indistinct speech—still staggering on attempting to walk—and still the general sensations highly agreeable when quiet.

At five o'clock, P. M., pulse fifty-two, but extremely variable on slight motion or exertion. At this time walked about a little, but soon sat down again, and immediately fell asleep.

At half past five o'clock was aroused, and on a little motion and exertion there was instantaneous nausea and thorough vomiting, the paroxysm consisting of three retching efforts. The vomiting was remarkably kind and easy, and ceased as suddenly as it began. In a minute afterwards, no sensation whatever from the vomiting remained. For about half an hour there was much less somnolency; but, after this period, it again returned. At this time began walking again—and again attended to business, by which the tendency to sleep was, in a good degree, kept off. Had little appetite for supper, and took but little. After supper, made calls upon acquaintance and friends; but, on sitting down, soon fell asleep in the chair, so took care not to stay long in one place.

At nine o'clock, P. M., still much somnolency, though less than during the early part of the evening. However, even at this time, fell asleep in a chair on ceasing to converse, though there was no material difficulty in keeping awake when engaged in conversation.

The succeeding three experiments were instituted for the purpose of determining whether Narcotine, in small and uniform doses, at regular and equal intervals, would produce any stimulant effects upon the system, which it had failed to do in single full doses.

EXP. V.—A. L. B. M., of ordinary susceptibility to the impression of medicines, with his pulse at sixty-eight in a minute, took, at half past nine o'clock, A. M. (Tuesday, March 8, 1831), half a grain of Narcotine.

At half past ten o'clock, the pulse at sixty, neither increased nor diminished either in force or fulness—a slight mazy feel of the head, so as to render it inconvenient to confine the attention to a book.

At eleven o'clock, pulse fifty-six, without appreciable change in force or fulness—sensations in the head as at half past ten.

At half past eleven, pulse at fifty-two, supposed to be rather softer than natural—a calm, placid, and pleasurable sensation. Now took another half grain of Narcotine. Immediately after twelve o'clock, M., walked about a quarter of a mile.

At half past twelve, pulse between fifty and fifty-six; but no stop-watch being then at hand, could not determine the number of beats any more precisely.

At one o'clock (the hour of dinner), appetite natural, and ate as usual. After dinner, again walked another quarter of a mile.

At half past two, pulse sixty-four—considerable hoarseness—no unusual sensations. At this time took another half grain of Narcotine.

At half past three, P. M., pulse fifty-six—certainly no increase in force or fulness—hoarseness increased—some vertigo, especially on motion—considerable somnolency. Took another half grain of Narcotine. For the greater part of the succeeding hour, so sleepy as to yield to it, and



sleep in a chair, though so lightly as to be roused by the most inconsiderable noise in the room.

At half past four, pulse fifty-two, but unchanged either in force or fullness, at least as far as could be determined. Vertigo altogether relieved since sleeping. Now took another half grain of Narcotine. After this, remained in a slight mazy, dozy, and pleasurable state, unable to read, or fix the attention upon anything, till six o'clock, P. M. Between this and nine o'clock, P. M., altogether disinclined to any exertion, and not even disposed for conversation. Toward the latter part of this period slept in a chair. At bed-time was entirely unable to void any urine, partly from deficient secretion, and partly from want of contractile power in the bladder.

(To be continued.)

### TYPHUS AND CHOLERA.

*Sinking Typhus compared with Malignant Cholera.* By THOMAS MINER, M.D.

Communicated for the Boston Medical and Surgical Journal.

'A VERY prominent symptom . . . consisted of paroxysms of *subsidentia*, or a death-like *sinking* sensation in the epigastrium, that was described, sometimes as extreme distress, sometimes as a painful sense of vacuity and faintness, sometimes as trembling or fluttering, sometimes as real pain and anguish, and at others was declared to be utterly indescribable. During the existence of these paroxysms, the coolness and numbness of the skin, the lividness of the extremities, the feebleness of the pulse, and the indications of distress in the countenance, were much augmented.'

'In many of those cases which were neglected, or treated with evacuations, or in which the early symptoms were not fully met and subdued by appropriate remedies, a peculiar and somewhat different, and usually irreparable sinking and exhaustion, occurred, after a critical effort, or in lieu of a crisis, on the third, fifth, or more commonly on the seventh day. . . . Under such circumstances, in addition to the sinking in common to other cases, the respiration was interrupted and peculiar, and much resembled that of the dying, or rather that of animals (as it is described) after a division of the *par vagum*; the inspirations occurring at intervals of several seconds, and being usually long and full, while the expirations were so short that the breath was parted with instantaneously. This *critical sinking*, in combination with morbid respiration, was often the *first warning of danger* to the patients and attendants, and it was almost invariably irremediable; for, although every symptom could be met, for a time, to the full extent, and although the most decided operative effects of medicine could be produced, and life often be prolonged for days, yet the weight of the disease could rarely be lessened, and in one of the succeeding critical efforts the same symptoms would almost inevitably prove fatal. . . . The *former* description of sinking and anxiety, which was principally referred to the epigastrium, in distinction from the *critical*, may be termed *ordinary sinking*.'

\* See Essay on Typhus Syncopealis, &c. Middletown, 1825, pages 12, 13, and 24.



The first of these kinds of distress at the stomach is the peculiar *gastric sinking*, which is the most prominent symptom of typhus syncopalis, and is present in every case in which it is not disguised by delirium or coma. It was also a symptom which attracted much attention in the celebrated disease of the Milbank penitentiary, of 1823, the only variety of sinking typhus which has ever been noticed by the medical writers of Great Britain. It is thus described, in very just and forcible language, by Dr. Latham.\* 'There was a very general complaint of what was called *sinking at the pit of the stomach*. What this sinking is, those only know who have suffered it. All patients speak of it by the same name, but do not describe it further. From observing and interrogating those who complained of it, I suspected it to consist of a certain degree of actual pain, combined with a *feeling which is akin to syncope*, and spreads from the stomach, as from a centre, over the whole frame. *It is a painful and overpowering sensation, as if animal life itself was hurt and lessened.*'

This gastric sinking is likewise an attendant on malignant cholera, according to the minute and very elaborate description of Broussais. His language scarcely admits of a translation. His account of the symptom will carry with it internal evidence of its extreme accuracy, to every one who is familiar with sinking typhus. 'Le malade accuse toujours une irritation considerable à la region de l'estomac, à l'épigastre. Ces douleurs l'occupent, plus que les coliques; ces douleurs l'oppriment, l'étouffent l'empêchant de respirer; il demande qu'on le redresse, en mettant sous lui un coussin qui fasse saillir sa poitrine, en la portant avant.'

It is a subject worthy of close attention, that in the extracts here made from the Essay on Typhus Syncopalis, there are *two* varieties of sinking described, the former of which is called the *ordinary* or merely *gastric sinking*, and the latter *critical sinking*. The former attends every case of sinking typhus, in which the patient has his reason sufficient to describe his feelings, in some period of the disease. The latter, or *critical sinking*, may be the first symptom which produces any alarm in the patient or attendants, though it is usually the consequence of the first kind of sinking, which has been suffered to remain under feeble or improper treatment. It is this critical sinking, attended with a collapse of all the powers of life, and often with a complete asphyxia, or with a deep, apoplectic coma, that we are so anxious to avoid in sinking typhus. *Ordinary* gastric sinking, except when it is so severe and gives such a shock to the system as to destroy life immediately, recurs by paroxysms in typhus syncopalis, being usually subject to remissions, and sometimes to complete intermissions, and a perfect collapse does not generally ensue, though it is occasionally the fact, till the disease has gone so far as to make a critical effort. In malignant cholera, as soon as the disease is fully developed, *ordinary* gastric sinking and *critical* sinking seem to be blended together in *one* general collapse, which is not liable to recur in successive paroxysms. The patient is either brought out of the single paroxysm, which in this case is not very liable to return, or he is fatally sunk by it, and dies. In the *common* cases of distinctly marked cholera,

\* See Johnson's Medico-Chirurgical Review, July, 1823.

† See Gazette des Etats Unis, June 27, and the two succeeding papers, 1839.

this critical sinking and collapse appear as early as in the *severest* description of sinking typhus. It is, however, probable, that ordinary sinking does usually attend the premonitory symptoms of cholera, though they are not noticed in the common accounts. An intelligent friend, who has two or three times been threatened with the precursors of cholera, has described this sinking pretty accurately, as it occurred in his own person.

The *general* principles of treating sinking typhus and malignant cholera are unquestionably the same; but there are various, and some of them very important, circumstances to be considered in their application. In perusing any account of a new or singular disease, we are apt to select a few of the severest cases, and consider them as the model which is to be followed in every other example of the complaint. We, therefore, are liable to distort the meaning of the writer, and do injustice to his practice—we mistake his exceptions for his general rule. Whoever reads with attention the present writer's Essay on Typhus Syncopalis will find, notwithstanding all that is said upon the fatal effects of injudicious vomiting and purging, and the strenuous manner in which the most vigorous support by opium, alcohol, &c. is enforced, that about three fourths of the cases of sinking typhus, in 1823, were at first purged, very cautiously it is true, with calomel, and that a very large majority of the patients recovered under a practice quite mild in *degree*, provided it was right in *kind*. Nothing is more absurd or fatal, than a routine which treats every case alike, more especially if it consists in an efficient course of the most active articles. The state of the brain in sinking typhus, and the liability to delirium or coma, are an important consideration, and demand as much attention as the state of the lungs in pneumonia. The state of the abdominal viscera, the defect of biliary secretion, and the peculiar torpor of the hepatic system, are equally prominent in the treatment of malignant cholera. The preponderance of *irritability*, or of *torpor*, in the whole or particular parts of the system, or the sudden transition from one state to the other, makes a very essential item in the treatment of every acute, atonic disease. As before stated, the *general* indications in sinking typhus are founded upon the *extreme exhaustion*, which actually exists in the worst cases, or into which the patient is liable to fall after the least debilitating measure. In cholera, it is our principal aim to *overcome the torpor*, which amounts to an almost complete paralysis of the powers of life. In this disease, debility, though it ought not to be trifled with, and increased by unnecessary and rash refrigeration, depletion, and evacuation, is, nevertheless, an object of much less importance than in sinking typhus. In the very severest cases, the exhaustion and torpor are alike in both diseases; but in most instances, as a general rule, we feel tolerably safe when we have overcome the torpor of cholera, and when in sinking typhus we are able to sustain the system under the exhaustion. It is not very uncommon in sinking fevers to find patients complaining of burning heat, and begging for cold water, when their mouth, breath and skin are cold. Hot brandy and water, with laudanum and essential oils, soon extinguish this *sensation* of heat, and make the patient wish for warm articles. This false sensation of heat is a prominent symptom of cholera.

From the experience and observation of twenty-six years, the *general treatment* in typhus syncopalis has become as *decidedly settled* as the

antiphlogistic regimen of Sydenham in the distinct or entonic smallpox. Under the most approved management, it rarely is fatal in one case in ten. The recent success in New London has demonstrated anew the utility of the most approved practice. The immense mortality in cholera, amounting to a third or a half of all the cases in which the disease is fully developed, most conclusively shows that either its principles are not understood, or there is some very essential mistake in their application. Insusceptibility to the curative action of ordinary means, is the characteristic of a malignant disease. The usual remedies for similar symptoms, in ordinary non-malignant cases, on the one hand, either make no visible impression; or, on the other, instead of *counteracting*, they *coincide* with the diseased action, and increase the morbid condition. In the former case, our analogies merely fail us; but in the latter, they seem to be entirely reversed. We are not, however, to despair, and timidly and inactively to relinquish our patients to their fate, or to expose them to the rashness of empiricism, in addition to the danger of their disease. Similar anomalous cases and irregular diseases must be investigated, and by this means a set of principles and general rules is to be collected. The remainder of this essay will be devoted to examples of this kind, which may perhaps cast some light upon the subject.

A very intelligent friend and able physician has frequently described, in conversation, a variety of pneumonia typhodes, which occurred in his practice about twenty years ago. A certain part of the severe cases, perhaps a third, under any treatment which he could devise, would almost invariably prove fatal. What surprised him most was, that in this set of patients, various and even opposite practice proved not only to be equally unsuccessful, but seemed to be *about* equally safe. The patients would generally live a certain time, apparently not much influenced by the treatment, and at last fail. A deobstruent, diaphoretic, and supporting course, succeeded in the other forms of the disease. In the severest cases, the great difficulty arose from the torpor, which, in nearly an equal degree, resisted the common remedial effects of treatment that seemed to be the most promising, as well as the injurious effects of a management that was apparently improper. In defiance of everything that was attempted, the disease would have its course, and finally prove fatal. The torpor of cholera very greatly resembles that of this obstinate pneumonia; and in the worst cases, all kinds of practice that are usually employed seem to be nearly indifferent, doing very little good or harm, being alike ineffectual.

When this pneumonia appeared, it was a new disease to all the physicians who saw it. They were not then, by any means, prepared to meet the oppressive torpor, with the same knowledge and dexterity that they would now possess in similar circumstances. Torpor, when it is combined with debility, is now found to be best overcome by deobstruents, assisted by *acid* excitants, diffusible stimulants, and regular uniform support. In the language of the schools, we need not only the *basis*, but the *adjuvans*, and the *corrigena*. Turbith mineral, calomel, arsenic, oil of turpentine, colchicum, sanguinaria, or actæa, &c. according to the part of the system which labors most, as well as to remove the general torpor, in very large doses, may be the *basis*; but it is not likely to pro-

duce its effect unless it is assisted by opium, alcohol, capsicum, or peppermint, &c. as an *adjuvans* or *corrigens*. Or, the latter may be the *basis*, and the former the *adjuvans* and *corrigens*. When great torpor has been combined with sinking typhus, a persevering and decisive use of *acrid* articles has often answered, in apparently desperate cases. Ten minims of oil of mint, made into an oleo-saccharum, given every hour, have succeeded. Ten minims of Fowler's solution an hour, have also restored the patient. Enemata of half an ounce of oil of turpentine, with the same or half the quantity of laudanum, repeated every two or three hours, have been frequently attended with salutary effect. In torpid pneumonia, half a drachm or drachm doses of calomel, qualified by large doses of opium, half ounce doses of the tincture of sanguinaria, or the equivalent in actæa, or wine of colchicum, or large quantities of turbit mineral, with strong support under their operation, have frequently changed and removed the morbid condition of the system. All these measures, however, require the assistance of external applications, with the uniform support of opium and alcohol, and in general, with a regular and constant supply of hot broth, milk-porridge, or other suitable nutriment. Such acrid and pungent articles lose half their effect, and are often unsafe, unless the stomach is very frequently (it is a good rule after every dose) supplied with proper nutriment. It is apprehended, that there is usually a greater failure in administering sufficient nutritious liquid food, as hot as it can be borne, and seasoned with pepper or other aromatics, than in the employment of medicine. As a general rule, where torpor is extreme, only moderate, but uniform, quantities of opium are required, and a free use of alcohol, essential oils, and acrid stimulants, is demanded; but when irritability is the most prominent, the main reliance is on opium, without being very scrupulous as to weight or measure. At any rate, it should be given freely enough to control the vomiting, diarrhoea, pain, and spasms, whatever may be the dose, and however frequently its repetition may be demanded. If, in consequence of this treatment, the local symptom should be transferred to some other organ, as is sometimes the case, it is then to be combated by the means which are found to be most effectual in removing local atonic affections. Should there supervene too great reaction—which, however, is not very common—it is the reaction of debility, and not of entony. These are all-important considerations, in the treatment of the sequel or the consecutive fever, which may follow a paroxysm of sinking in any asthenic disease.

When it is recollected that cases of critical sinking in typhus syncopalis have been met with, in which the pulse has been wanting at the wrist for eight hours, or in which it has beat only twenty-seven times in a minute, and also of the employment of two drachms of laudanum every hour, and of one drachm of tincture of stramonium every two hours for four or five days, as well as those in which oil of turpentine, other essential oils, capsicum, mineral solution, &c. have been used so freely, and yet the patients recovered, we have the strongest inducement in favor of the vigorous and persevering application of the appropriate remedies. Though the critical sinking, or extreme collapse, is always to be dreaded, and every timely and reasonable exertion is demanded to prevent its occurrence, yet, when we meet with it, our exertions are to be increased,

and it is confidently believed, if we make them upon just and rational principles, they will be often crowned with success.

✍ The writer not having kept a copy of the late communication upon this subject by him, is unable to compare the two essays, and to correct this by the other. He therefore strongly suspects that in the present article there will be found several repetitions, for which he must beg the indulgence of the candid reader.

*Middletown, Conn. August 13, 1832.*

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## BOSTON MEDICAL AND SURGICAL JOURNAL.

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BOSTON, AUGUST 29, 1832.

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### SALINE INJECTIONS IN CHOLERA.

We have, in the number of the London Medical Gazette for June 9th, an account of four cases in which saline injections into the veins were employed in cholera. In all, the symptoms previous to the employment of the remedy indicated a fatal termination, and the injection seems to have been regarded as a dernier resort. In the first case, which occurred in one of the London hospitals under the care of Mr. Tweedie, the mixture employed was as follows: muriate of soda, 3ij.; carbonate of soda, ʒij.; water, 60 ounces—temperature 110 to 115 deg. Of this preparation, fifty ounces were slowly injected. The pulse became stronger, and the patient expressed himself relieved. This amendment was not permanent; the symptoms of collapse returned, and two hours afterward the injection was repeated. Improvement was equally manifest as before, and proved equally transitory. The patient soon sunk, and died about two hours after the second injection.

The second case related occurred in a different hospital. The patient was a woman employed as nurse. About three pints of the injection were thrown in, of the same strength as that last described: after which the pulse rose, becoming fuller, and the blood was more florid. The apparent benefit, however, was but temporary, and the case terminated like the first.

The third case, which occurred at Leith, in Scotland, was that of a female, very intemperate in her habits, and in the sixth month of pregnancy. At the time of employing the remedy, the cramps were severe in her legs, there was extreme restlessness, and every indication of sinking. Under these circumstances, lb. iijss. of injection were administered at the temperature of 105 deg. Under the use of this, the symptoms were ameliorated; the countenance, which before was death-like, brightened up, and she began to converse. This continued, however, only for a

short time, and she shortly relapsed into her previous state. After an interval of two hours the injection was repeated and lb.vii. administered. The effect of this was also very striking. Before it was finished, the pulse had returned to a healthy fulness and firmness. Seven hours afterward, the countenance having collapsed and the breathing become difficult, lb.v. were injected. The first few ounces which were thrown in caused pain at epigastrium, and faintness, and the pulse became imperceptible; the injection was then suspended for a few moments, and the pain abated. She expressed herself relieved by the operation, but the vomiting continued. The following day she began to improve, and eventually recovered.

A fourth case also occurred at Leith, and is related by Dr. Craigie of that place. The patient was a boy ten years of age. At the time of employing the treatment the pulse was quite imperceptible; the face bedewed with cold perspiration, the hands and feet cold. Six pints of the solution were employed, and injected in the course of twenty minutes. During this process the pulse returned to the wrist, the coldness of the extremities wore off, and the countenance improved. This favorable effect continued about half an hour, when the tendency to relapse became evident. Three hours later the pulse had again become imperceptible. The injection was repeated to the amount of lb.iii. with equally marked amendment as before. The effect of this continued about two hours; he then relapsed, and soon sunk. It was remarked that large watery evacuations from the bowels came away soon after the last injection.

Some other circumstances in regard to the above cases mentioned in the reports, will aid us in determining the value of the remedy. In the post mortem examination of the first case it was observed, that although nearly a gallon of fluid had passed into the vein, the blood in the right auricle of the heart and in every part of the body was of a consistence like currant jelly, while the serous surfaces were quite dry, and a large quantity of fluid was found in the intestines; showing that the absorption was very rapid, and that the sensible properties of the blood were not altered by the saline ingredient. It is also worthy of remark how instantaneous, as it were, was the good effect produced, and how short the period during which it continued. Surely, neither of these facts accord with the supposition that the effect depended on any chemical change produced in the blood itself, or any of the secreted fluids. Perhaps, therefore, pure water, or any other mild liquid at the same temperature, might have been substituted, and the effect would have been substantially the same. An opinion, however, founded on so small a number of cases cannot be expressed with entire confidence; and, in regard to these, the apparent improvement by which the exhibition of the remedy was followed, on whatever principle it be explained, is clearly an encouragement to its repetition. We observe it generally noticed in the New York papers,

that saline injections have also been tried there with successful result ; but the particulars of the cases are not mentioned, and we are unable to say, at present, how far they afford an argument in favor of the treatment. Measures have been taken, however, to procure authentic accounts of these cases, which we hope soon to submit to the profession.

CASE OF MALIGNANT CHOLERA, WITH APPEARANCES ON DISSECTION.

THERE have been but three cases of malignant cholera reported in this city, and these were all fatal. The following is an account of appearances on dissection of one of the first cases. We shall endeavor in our next to offer some notice of the post-mortem examination of the other two.

M. F., aged 37, widow, in good circumstances, and temperate in habits, living in an old wooden house out of repair, and which has been regarded as unhealthy on account of damp state of cellar, was seized about 11, A. M., on the morning of 15th August, with violent cramps in stomach, followed by vomiting and purging. The spasms soon became universal, and were brought on by the least motion, even of the head to drink. Vomiting and purging both ceased before 1, and after this only one stool, half an hour before death. The spasms continued throughout ; thirst urgent. Lips, and more or less of the face, sublivid ; mind retained till towards the last ; voice greatly altered about three hours before death, which occurred at half past six, P. M. Forty minutes after death, right hand and fore arm affected with slight clonic spasm, occasionally becoming tonic. Surface about knees and below, warm ; upper extremities cold and moist ; faint purplish tinge or stain of hands, not elsewhere. Countenance tranquil, rather sallow, pale, not dark. Body not generally rigid ; arms half-flexed and slightly so. After the examination, the rigidity increased ; most noticed on left side of neck and front of thighs. Abdomen not distended, rather tense. Thorax. Heart of moderate size ; color not remarkable : in left side, some soft, dark coagula, with some liquid blood. Aorta as far as arch contained blood, very dark, not 'tarry,' with a few coagula. Lungs, crepitant ; left lower lobe only engorged, and that not greatly. Abdomen. Peritoneum felt somewhat pasty ; more or less dryish everywhere ; the vessels ramifying beneath, through the whole course of small intestines, being injected with dark blood. Stomach and intestines not distended or contracted. Color of stomach moderately red ; most so in pyloric half. Internal surface of intestines uniform rosy, from pylorus to cæcal valve. Large intestines less red than small. Thickness of mucous membrane rather increased ; that of stomach very easily rubbed off ; resembled coagulated lymph on a serous membrane, or the false membrane found on trachea in croup. Mucous membrane of small intestines rather firm than otherwise. Stomach contained 3 iij. of opaque, yellowish, homogeneous fluid. Contents of small intestines about lb. j. fluid yellowish white, nearly purulent in appearance, turbid ; in lower half, thinner, with more distinct flakes suspended in it ; these last somewhat resembled mucus, but were perfectly opaque, of a dirty white, and rather pasty in consistence. In large intestines this fluid degenerated into rice-water, as commonly described ; quantity here about lb. j. No feces in intestinal cavity, nor any trace of bile except in the stomach. Liver considerably engorged ; gall-bladder about usual size, and half full of very dark, green, thick bile ; duct permeable to middle of cystic, at which point it was divided in dissection. Kidneys smaller than usual, rather soft ; pelvis of the right contained a little opaque, dirty white, thick fluid. Bladder much contracted ; cavity sufficient to contain a nutmeg ; contained no urine, but only a drop of fluid, such as found in the kidney. Brain not examined.

ACETATE OF LEAD IN CHOLERA MORBUS, OR HUMID MORTIFICATION.

To the Editor of the Boston Medical and Surgical Journal.

SIR,—I have, in the course of twenty years' practice, used sugar of lead, combined with opium or Goulard's extract of lead with laudanum, with the happiest effect and the most decided advantage, in preference to the usual prescription recommended in these cases. By publishing this small contribution in your useful work, it may perhaps be suggested to some one else to apply these articles to the formidable scourge now visiting our happy country. The following are my recipes :—

R. Acetate of Lead, 3i.  
Gum Opium, gr. iij.  
M. f. Pil. No. xii.

R. Goulard's Extract of Lead,  
Tincture of Opium, aa 3ss.  
Ten drops every 10 or 15 minutes.

One of the pills every 10 or 15 minutes, until puking and purging subside ; or the same until the mortification or vesicle separates from the live flesh.

I have usually given castor oil and mint next day, so as to operate on the bowels freely.

Columbia, Ala.

W. G.



*To the Editor of the Boston Medical and Surgical Journal.*

SIR,—I have observed in your Journal of the 13th inst. a letter addressed by me to Dr. L. A. Smith, of Newark, N. J., in relation to the treatment of cholera patients in the stage of collapse, by means of frictions of mercurial ointment, camphor and capsicum. My object in the present communication is, to disclaim any credit in the suggestion of this remedy, it belonging exclusively to Stephen C. Rae, M.D. Principal Physician of the Greenwich Hospital, who has employed it heretofore successfully in the treatment of enteritis. A simple regard to justice induces me to make this statement, hoping you will give it the same publicity as the letter above alluded to.

New York, August 22, 1832.

Respectfully yours,

CHAS. A. LEE, M.D.

*Erratum for Dr. Miner's last paper.*—Sydenham's method of employing opium to prevent coma is in page 372 of Rush's edition, and not in page 115, as mentioned by mistake in the manuscript, and in page 23, in the note, of this Journal. Dr. Rush's comment is as follows:

'The account given by our author of his having prevented coma by means of opium, shows the relative operation of that medicine to the state of the system. In an elevated state of the bloodvessels of the brain above the par of health, the same dose of opium will produce delirium, which in a state below that standard will remove coma, and produce healthy wakefulness. This is one among many other instances mentioned in the dedication of this work, in which our author's facts, relative to the use of opium, accord exactly with the modern belief of its belonging to the class of stimulating medicines.'

Dr. M. wishes to correct another oversight in his communication. Cramp in the calves of the legs and extremities is so common a symptom, that it ought to be mentioned as one of the distinguishing traits of epidemic cholera.

We regret that, in consequence of the accidental omission of a line in Dr. Tully's communication, we are under the necessity of requesting the reader to make the following very important correction. On page 7, line 11, for 'I am confident, from multiplied observations, that all narcotics are necessarily assistants,' read 'I am confident, from multiplied observations, that there is no sort of foundation for the dogma that all narcotics are necessarily stimulants.' Dr. T.'s letter, containing additional remarks on the subject of this sentence, is excluded from this number by want of room.

Whole number of deaths in Boston for the week ending Aug. 25, 28. Males, 11—Females, 17. Still-born, 2.

Of consumption, 7—teething, 1—nervous fever, 1—scarlet fever, 2—cachexy, 1—dropsy in the brain, 2—child-bed, 1—apoplexy, 1—dropsy, 2—inflammation in the bowels, 1—intemperance, 1—liver complaint, 2—palsy, 1—drowned, 1—typhus fever, 2—malignant cholera, 1.

## HARVARD UNIVERSITY.

MASSACHUSETTS MEDICAL COLLEGE.

THE Medical Lectures in Harvard University will begin in the Medical College, Mason Street, Boston, on the third Wednesday in October, at 9 o'clock, A. M., and be continued four months.

Anatomy and Surgery, Dr. WARREN.

Chemistry, Dr. WENSTAN.

Materia Medica, Dr. BIGLOW.

Midwifery and Medical Jurisprudence, Dr. CHANNING.

Demonstrations in Anatomy, Dr. LEWIS.

Theory and Practice of Physic and Clinical Medicine, Drs. JACKSON and WARE.

At a meeting of the Medical Faculty, held February 17th, 1832, it was

VOTED: That in all future examinations for the Degree of Doctor in Medicine, examinations in Natural Philosophy and in the Latin language shall be conducted in the same manner as the examinations in the other branches required by the Statutes; and that an acquaintance with these branches will be insisted on as requisite for the admission to the degree.

The examination in Latin will be made in Cicero's Select Orations; and in Natural Philosophy, in Grand's Elements of Natural Philosophy.

Boston, July 21, 1832.

WALTER CHANNING,

Dean of the Medical Faculty.

The Massachusetts General Hospital is open to the Medical Class for the practice of Medicine and Surgery.

The amount of Fees will be the same as heretofore.

## BERKSHIRE MEDICAL INSTITUTION.

THE Annual Course of Lectures will commence on the first Thursday in September, and continue fourteen weeks.

Anatomy, Surgery, and Physiology, W. PARKER, M.D.

Theory and Practice of Medicine, and Obstetrics, H. H. CHILDS, M.D.

Materia Medica, and Medical Jurisprudence, E. BARTLETT, M.D.

Botany, Chemistry, and Natural Philosophy, C. DEWEY, M.D.

Demonstrator of Anatomy, J. M. HUBBARD, A.M.

Fee for the whole Course of Lectures, \$45; those who have attended two full Courses at an incorporated Medical School, pay only \$25; Graduation, \$12. Boarding, from \$1.50 to \$2 a week. The tickets are to be paid for at Matriculation, or competent security given.

Pittsfield, Mass. August 13th, 1832.

By order of the Trustees, S. M. McKAY, Secretary.

NOTE.—The following authors are recommended to be used by the Students during the Lecture Term. On Anatomy, C. Bell, Horner, and Cloquet.—Surgery, S. Cooper, and W. Gibson.—Practice and Theory, Gregory, Good, Eberle, and Dewees.—Obstetrics, J. Burns, Dewees, and London Practice.—Materia Medica and Medical Jurisprudence, Beck, Chapman, and Eberle.—Chemistry, Bronde, Farrier, and Webster.

The Berkshire Medical Institution was incorporated for a College of Medicine in 1823. By an act of the Legislature, the Medical Graduates of Harvard University are authorized to practice Physic and Surgery; and, by an additional act, 'any person who shall be graduated a Doctor of Medicine in the BERKSHIRE MEDICAL INSTITUTION by the authority of Williams College, shall be entitled to all the rights, privileges and immunities granted to the Medical Graduates of Harvard University.'

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